

Why does water need to be treated?

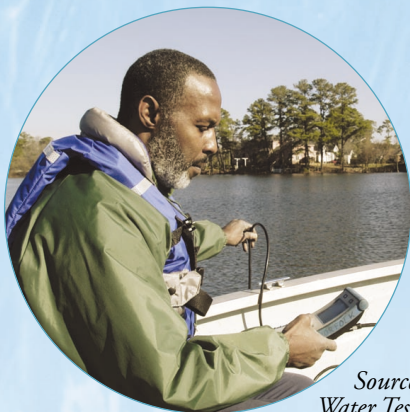
"Natural" does not always mean "pure." As water flows over the land on its way to our lakes, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants such as viruses and bacteria, which may come from agricultural operations and wildlife living in the watershed. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes, and can come from gas stations, urban stormwater runoff, and septic systems.

In addition to these contaminants, all lakes and streams contain algae, which are microscopic plants that can cause taste and odor in drinking water. We do our best to keep most of these contaminants out of our lakes; then our treatment plants make sure that the water delivered to your home meets all government standards and is clean and safe for you to drink.



Source
Water Testing



Department of Utilities
P.O. Box 1080
Norfolk, Virginia 23510-1080

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2004 Water Quality Report (2003 Data)



City of Norfolk Department of Utilities

High quality drinking water for 700,000 people every day.

About this report

This is Norfolk's annual Consumer Confidence Report on drinking water. This report lists the substances occurring in Norfolk's drinking water from January 2003 through December 2003. The amount of each substance found in the water and the maximum level allowed by law are also listed. The Norfolk Department of Utilities sends you an updated report every year. For more frequent water quality information, visit our website at www.norfolk.gov/utilities or call Vernon Land, Water Quality Manager, 441-5678.

For more information about decisions affecting your drinking water quality, you may attend Norfolk City Council meetings. For times and agendas, call the City Clerk's office at 664-4253. For more information about your drinking water or the Department of Utilities, Call 664-6701 (Utilities Administrative Office).

Source Water Assessment

In 2001 the Hampton Roads Planning District Commission conducted a study on all of the water sources in the area, including Norfolk's, to determine the susceptibility of reservoirs, rivers, and wells to contamination. The report determined that reservoirs, in general, have the greatest possibility of being contaminated by accidental discharge of waste materials. However, the two City of Norfolk water treatment plants test and treat the reservoir water to meet the Federal government's high standards for drinking water.

Wells were determined to be fairly safe from contamination. This report is available by contacting the Norfolk Department of Utilities.



Norfolk Water Quality Chemists

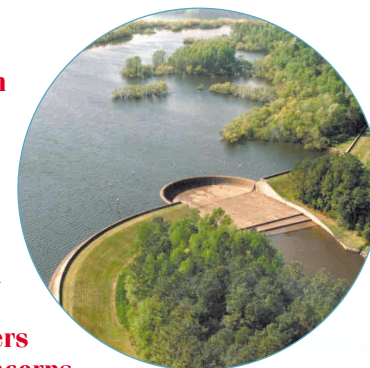
What is in Norfolk's drinking water?

To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) has developed regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) has established similar but less stringent regulations for bottled water.

All drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of these contaminants does not indicate that the water poses a health risk.

However, some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as people undergoing chemotherapy, organ transplant patients, people with HIV/AIDS or

other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice from their health care providers regarding their concerns about the public water supply.



Western Branch Reservoir

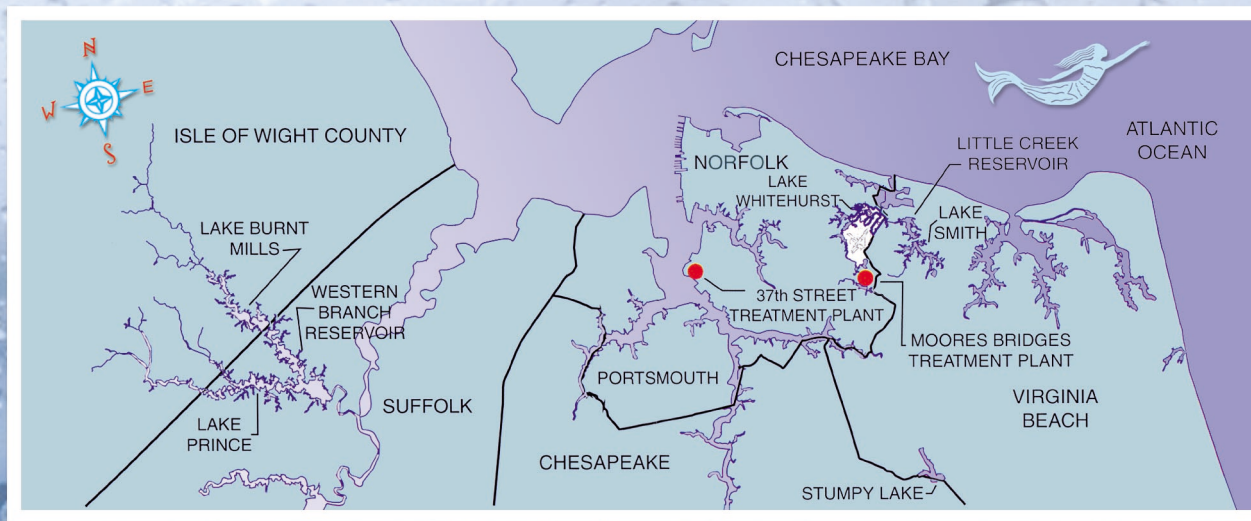
The EPA and The Centers for Disease Control and Prevention Guidelines on reducing the risk of infection by Cryptosporidium and other microbial contaminants are available from:

EPA Safe Drinking Water Hotline: (800) 426-4701

Where does Norfolk's drinking water come from?

Norfolk's drinking water comes from various water sources:

- ▶ Western Branch Reservoir
- ▶ Lake Whitehurst
- ▶ Lake Lawson
- ▶ Lake Prince
- ▶ Little Creek Reservoir
- ▶ Lake Gaston
- ▶ Lake Burnt Mills
- ▶ Lake Smith
- ▶ Nottoway and Blackwater Rivers
- ▶ Lake Wright
- ▶ Four deep wells



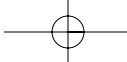


Table Definitions

SUBSTANCE – The compounds detected in Norfolk’s drinking water during calendar year 2003.

All substances detected are below allowed levels. Not listed are the hundreds of other compounds for which we tested that were not detected at all.

LIKELY SOURCE – Where the substance could come from.

AVG. LEVEL – Average amount of substance found in the water during the year.

MAXIMUM CONTAMINANT LEVEL GOAL (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety set by EPA.

MAXIMUM CONTAMINANT LEVEL (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as possible, using the best available treatment technology.

TREATMENT TECHNIQUE (TT) – A required process intended to reduce the level of a contaminant in drinking water.

ACTION LEVEL (AL) – The concentration of a contaminant that, if exceeded, triggers treatment or other water system requirements.



Table Key

- ppm – One part per million; the equivalent of 1 minute in 2 years
- ppb – One part per billion; the equivalent of 1 minute in 2,000 years
- pCi/L – Picocuries per liter (a measure of radioactivity)
- NTU – Nephelometric Turbidity Unit (a measure of very small particulate matter in drinking water)
- > – Greater than
- ND – Not detected in the water



The Virginia Department of Health and the City of Norfolk Department of Public Health reviewed this water quality report.

Regulated Substances

The EPA regulates these substances. That means we are required to test for them in your drinking water. They cannot be above a certain level referred to as the MCL (maximum contaminant level).

Substance	Likely Source	Range	Average Level	Highest Level	MCL	MCLG	Unit	Meets EPA Stds.
Atrazine	Herbicide	ND - 0.06	ND	0.06	3	3	ppb	✓
Barium	Erosion of natural deposits	20 - 40	27	40	2000	2000	ppb	✓
Chloramine	Drinking water disinfectant	3.1 - 3.7	3.4	3.7	4	4	ppm	✓
Dalapon	Herbicide	ND - 2.2	ND	2.2	200	200	ppb	✓
Di (2-Ethylhexy)phthalate	Common laboratory cross-contaminant	ND - 0.61	ND	0.61	6	0	ppb	✓
Fluoride	Added for the prevention of tooth decay	0.16 - 1.22	0.90	1.09*	4	4	ppm	✓
Gross Alpha Activity	Erosion of natural deposits	0.3 - 0.4	0.4	0.4	15	0	pCi/L	✓
Gross Beta Activity	Erosion of natural deposits	3.4 - 5	4.2	5	50	0	pCi/L	✓
Hexachlorocyclopentadiene	Pesticide component	ND - 0.08	ND	0.08	50	50	ppb	✓
Haloacetic Acids (HAA5)	Drinking water disinfection by-product	28 - 72	41	47**	60	N/A	ppb	✓
Nitrate as Nitrogen	Erosion of natural deposits, runoff	0.16 - 0.46	0.27	0.46	10	10	ppm	✓
Radium 226/228	Erosion of natural deposits	1.3 - 1.8	1.6	1.8	5	0	pCi/L	✓
Total Organic Carbon	Occurs naturally in the environment	2.29 - 3.69	2.81	3.69	TT	TT	ppm	✓
Trihalomethanes (TTHM)	Drinking water disinfection by-product	32 - 90	52	59**	80	N/A	ppb	✓

*This number is the highest monthly value of compliance samples for the calendar year
**This number is the highest quarterly running average of compliance samples for the calendar year

Turbidity

Turbidity is a measure of the cloudiness of water. Turbidity, by itself, is not harmful, but it can interfere with the disinfection of drinking water.

Substance	Likely Source	Lowest Monthly Percentage of Samples Meeting the Limit	Highest Level (NTUs)	MCL	MCLG	Unit	Meets EPA Stds.
Turbidity	Soil Runoff	98% (January, 37th Street)	0.40	<95%	N/A	NTU	✓

Microbiological Contaminants

Total Coliform bacteria are naturally present in the environment. They are used as an indicator that other, potentially harmful bacteria may be present.

Substance	Likely Source	Number of Samples Indicating Presence of Bacteria	Highest Monthly percentage of Positive Samples	Month of Sampling	MCL	MCLG	Meets EPA Stds.
Total Coliform Bacteria	Naturally present in environment	4	1.3%	May, Jun, July	>5% of all samples positive for total Coliform	0	✓

Lead & Copper in Customers’ Homes

We monitor for both lead and copper in fifty of our customers’ homes. No lead was detected at the monitoring level.* Copper is typically found in very low levels in homes and comes from the corrosion of copper plumbing and brass fixtures. Norfolk is on a reduced monitoring schedule due to extremely low lead levels. This data is from our 2002 sampling.

Substance	Likely Source	Results at the 90th Percentile	Number of Homes Exceeding Action Level	Action Level	Unit	MCLG	Meets EPA Stds.
Copper	Corrosion of Household Plumbing Systems	0.207	0	1.3	ppm	1.3	✓

*Lead and copper compliance is measured at the 90th percentile of all samples taken.

Unregulated Substances

The EPA does not regulate these substances, but they must be monitored. By monitoring for these substances, the EPA gathers information about their occurrence in drinking water, to be used for developing limits.

Substance	Likely Source	Range	Average Level	Highest Level	MCL	Unit
Aluminum	Erosion of natural deposits; also comes from the addition of treatment chemicals at the water treatment plant	0.18 - 0.35	0.28	0.35	None	ppm
Boron	Erosion of natural deposits	ND - 0.1	ND	0.1	None	ppm
Manganese	Occurs naturally in the environment	ND	ND	ND	None	ppm
Sodium	Occurs naturally in the environment; also comes from the treatment chemicals at the water treatment plant	11 - 22	17	22	None*	ppm
Sulfate	Occurs naturally in the environment; also comes from the treatment chemicals at the water treatment plant	23 - 32	27	32	None	ppm
Metolachlor	Pesticide component	ND - 0.6	ND	0.6	None	ppb

*For physician-prescribed “no salt diet,” a limit of 20 ppm is suggested.

Other Information

Substance	Range	Average Level	Suggested Limit	Unit
Radon 222	3	3	None	pCi/L
Chloride	16 - 19	18	250	ppm
Hardness	35 - 54	41	None	ppm
pH (acidity)	7.2 - 7.7	7.4	6.5 - 8.5	pH units
Silica	3 - 8	5	None	ppm
Total Dissolved Solids	85 - 120	107	500	ppm

Cryptosporidium and Giardia

These are microscopic one-celled organisms that get into lakes and streams through runoff of infected animal wastes. If ingested, contaminants such as Cryptosporidium and Giardia can cause serious illness in susceptible people. Our source water is routinely tested for Cryptosporidium and Giardia. While minute traces of the organisms have been found in the untreated water on rare occasions, Cryptosporidium and Giardia have never been detected in our treated water. Disinfection procedures performed at the water treatment plant and throughout the distribution system greatly reduce the threat of illness from Cryptosporidium, Giardia and other microbiological contaminants.